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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/719,775	11/20/2003	Michael L. Lightstone	NVID-082/00US	2892

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EXAMINER

TANG, KENNETH

ART UNIT	PAPER NUMBER
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2195

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/719,775	Applicant(s) LIGHTSTONE ET AL.	
	Examiner KENNETH TANG	Art Unit 2195	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 November 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>11/20/03</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 1-20 are presented for examination.

Information Disclosure Statement

2. The information disclosure statement (IDS) submitted on 11/20/03. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

3. Claims 17-19 are directed to non-statutory subject matter. Claim 17 is directed to a computer system that is software, per se. The computer system comprises a software program, a processor usage monitor, and a processor usage controller, and each could be interpreted to one of ordinary skill in the art as being software, per se. Therefore, claim 17 is found to be non-statutory. Claims 18-19 are rejected as being dependent upon rejected claim 17.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claim 14 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The term "sufficient margin" in claim 14 is a relative term which renders the claim indefinite. The term "sufficient" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. Therefore, claim 14 is rejected under 35 U.S.C. 112, second paragraph.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-7, 9-14, 17, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oh et al. (hereinafter Oh) (US 2007/0106917 A1).

6. As to claim 1, Oh teaches a method of managing utilization of an integrated circuit (IC) processor, comprising:

monitoring processor utilization (Fig. 3, item S31) by an adjustable software program having at least two different performance levels (7 different levels of a clock throttle rate, etc., page 1, [0008]), wherein each performance level has a different associated IC processor

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utilization (7 different levels of a clock throttle rate could be 12.5%, 25%, 37.5%, 50%, 62.5%, 75%, and 87.5%, etc., page 1, [0008]); and

selecting a performance level-of said adjustable software program to maintain IC processor utilization for said adjustable software program within control constraints on IC processor utilization (clock rate is adjusted but stays within the constraints of the range of a min reference usage and a maximum reference usage) (page 2, [0026], [0027]).

7. Oh is silent in explicitly teaching that the performance levels are associated with data processing quality of said adjustable software program. However, one of ordinary skill in the art would know that varying the performance level would also vary quality, and therefore, performance would be associated with quality. It would be obvious to vary the performance level to vary the quality in order to be able to control quality. Therefore, claim 1 is unpatentable in view of the reference of Oh.

8. As to claim 2, Oh teaches wherein said selecting said performance level comprises: selecting a highest performance level for highest quality compatible with a constraint of maintaining a minimum idle thread utilization over a range of operating conditions (clock rate of the CPU is adjusted and stays within the minimum and maximum range until it reaches the optimum rate and then is maintained at that rate, page 2, [0027]-[0029]).

9. As to claims 3-4, Oh teaches further comprising: selecting said minimum idle thread utilization (page 2, [0028], [0029]). Oh is silent in having another software program to start or execute based on said minimum idle thread utilization. However, it would have been obvious to

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one of ordinary skill in the art to have another software program to start or execute based on said minimum idle thread utilization because it would provide the predicted result of allowing for the best initial conditions as well as optimizing performance by having minimum idle thread utilization.

10. As to claim 5, Oh teaches wherein said selecting a performance level comprises: selecting a highest performance level compatible with the constraint of maintaining IC processor utilization of said adjustable software program within a range having a minimum utilization and a maximum utilization (clock rate of the CPU is adjusted and stays within the minimum and maximum range until it reaches the optimum rate and then is maintained at that rate, page 2, [0027]-[0029]).

11. As to claim 6, Oh teaches wherein said selecting a performance level comprises: selecting a highest performance level compatible with a constraint on maintaining a minimum idle thread utilization for a range of operation, a constraint on a minimum IC processor utilization, and a constraint on maximum IC processor utilization (clock rate of the CPU is adjusted and stays within the minimum and maximum range until it reaches the optimum rate and then is maintained at that rate, page 2, [0027]-[0029]).

12. As to claim 7, Oh teaches further comprising: measuring IC processor utilization for each of said performance levels to determine a relationship between performance level and IC

processor utilization (see Abstract, Fig. 3, items S31, S33).

13. As to claims 9-12, they are rejected for the same reasons as stated in the rejection of claims 2-5, respectively.

14. As to claim 13, it is rejected for the same reasons as stated in the rejection of claim 3.

15. As to claim 14, Oh teaches further comprising: having a performance level with a processor utilization below a maximum IC processor utilization by a sufficient margin to accommodate differences in processor performance of at least two different types of IC processors (page 2, [0028], [0029], page 1, [0008]). Oh is silent in having a startup mode that selects a startup performance level that would start the processor utilization below the maximum IC processor utilization. However, it would have been obvious to one of ordinary skill in the art to have another software program to start or execute at a utilization that is within the utilization range of Oh because it would provide the predicted result of allowing for workable initial conditions that allow for optimizing performance.

16. As to claim 17, Oh teaches a computer system (see Abstract), comprising:

a software program resident on a memory, said software program having a plurality of performance levels associated, each performance level having a different associated processor utilization (7 different levels of a clock throttle rate could be 12.5%, 25%, 37.5%, 50%, 62.5%, 75%, and 87.5%, etc., page 1, [0008]);

a processor usage monitor for monitoring processor utilization of said software program and idle thread utilization (Fig. 3, item S31, Fig. 4); and

a processor usage controller configured to select a highest performance level of said software program to provide highest quality data processing while maintaining processor usage of said software program within a desired range of utilization and maintaining a minimum idle thread utilization for a range of operating conditions (clock rate is adjusted but stays within the constraints of the range of a min reference usage and a maximum reference usage) (page 2, [0026], [0027]).

17. Oh is silent in explicitly teaching that the performance levels are associated with data processing quality of said adjustable software program. However, one of ordinary skill in the art would know that varying the performance level would also vary quality, and therefore, performance would be associated with quality. It would be obvious to vary the performance level to vary the quality in order to be able to control quality. Therefore, claim 1 is unpatentable in view of the reference of Oh.

18. As to claim 20, it is rejected for similar reasons as stated in the rejection of claim 1. Furthermore, Oh is silent in explicitly teaching that the performance levels are associated with data processing throughput of said adjustable software program. However, one of ordinary skill in the art would know that varying the performance level would also vary throughput, and therefore, performance would be associated with throughput. It would be obvious to vary the performance level to vary the throughput in order to be able to control throughput. Therefore, claim 20 is unpatentable and obvious over the reference of Oh.

19. Claims 8, 15-16 and 18-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oh et al. (hereinafter Oh) (US 2007/0106917 A1) in view of Kressin (US 6,535,238 B1).

20. As to claim 8, it is rejected for similar reasons, citations and teaching as stated in the rejection of claim 1. In addition, Oh does teach to a system that is compatible operating with video files to watch a movie or a program broadcasted on the Internet, etc. However, Oh is silent in explicitly teaching wherein said software program is a video encoder. Kressin teaches a method of managing processor utilization in a video system using a video encoder having a plurality of encoding levels. CPU resource utilization is monitored using thresholds and controlled by dynamically varying the rate at which video images are compressed in order to maintain a target level of CPU resource usage (Fig. 4, item 356, col. 10, lines 1-5, col. 1, lines 56-64 and col. 2, lines 1-14). Kressin relates to a video system and Oh describes in page 1, [0012] that the system is compatible operating with video files to watch a movie or a program broadcasted on the Internet, etc. One of ordinary skill in the art would have known to modify Oh's resource utilization system such that it would incorporate the use of a video encoder, as taught in Kressin. The suggestion/motivation for doing so would have been to provide the predicted result of better controlling resource usage during the use of video and make it less resource intensive and thus allowing effective operation on a wide range of system processors and under varying workload conditions (col. 1, lines 44-67). Therefore, it would have been obvious to combine Oh and Kressin to obtain the invention of claim 8.

21. As to claim 15, it is rejected for similar citations and teachings as stated in the rejection of claim 1. However, Oh is silent in teaching the use of a software video encoder having a plurality of encoding levels as performance levels. Kressin teaches a method of managing processor utilization in a video system using a video encoder having a plurality of encoding levels. CPU resource utilization is monitored using thresholds and controlled by dynamically varying the rate at which video images are compressed in order to maintain a target level of CPU resource usage (Fig. 4, item 356, col. 10, lines 1-5, col. 1, lines 56-64 and col. 2, lines 1-14). Kressin relates to a video system and Oh describes in page 1, [0012] that the system is compatible operating with video files to watch a movie or a program broadcasted on the Internet, etc. One of ordinary skill in the art would have known to modify Oh's resource utilization system such that it would incorporate resource utilization based on the video encoding features, as taught in Kressin. The suggestion/motivation for doing so would have been to provide the predicted result of better controlling resource usage during the use of video and make it less resource intensive and thus allowing effective operation on a wide range of system processors and under varying workload conditions (col. 1, lines 44-67). Therefore, it would have been obvious to combine Oh and Kressin to obtain the invention of claim 15.

22. As to claim 16, Oh teaches wherein said minimum idle thread utilization is maintained until other of said software programs have a processor CPU utilization greater than a threshold utilization (Fig. 3, item S33, page 2, [0030] and [0026]).

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23. As to claim 18, Oh does teach to a system that is compatible operating with video files to watch a movie or a program broadcasted on the Internet, etc. However, Oh is silent in explicitly teaching wherein said software program is a video encoder. Kressin teaches a method of managing processor utilization in a video system using a video encoder having a plurality of encoding levels. CPU resource utilization is monitored using thresholds and controlled by dynamically varying the rate at which video images are compressed in order to maintain a target level of CPU resource usage (Fig. 4, item 356, col. 10, lines 1-5, col. 1, lines 56-64 and col. 2, lines 1-14). Kressin relates to a video system and Oh describes in page 1, [0012] that the system is compatible operating with video files to watch a movie or a program broadcasted on the Internet, etc. One of ordinary skill in the art would have known to modify Oh's resource utilization system such that it would incorporate the use of a video encoder, as taught in Kressin. The suggestion/motivation for doing so would have been to provide the predicted result of better controlling resource usage during the use of video and make it less resource intensive and thus allowing effective operation on a wide range of system processors and under varying workload conditions (col. 1, lines 44-67). Therefore, it would have been obvious to combine Oh and Kressin to obtain the invention of claim 18.

24. As to claim 19, Oh (Fig. 4, item 356, col. 10, lines 1-5, col. 1, lines 56-64 and col. 2, lines 1-14) and Kressin (page 1, [0012]) teaches wherein said system comprises a personal content recorder and said video encoder is adapted to record broadcast content.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

- **Chiang et al. (WO 97/01935)** discloses multi-layer encoding video system such that the encoding levels are associated with system factors such as throughput/data rate and the picture quality and resolution required at each layer (page 6, lines 13-27, page 11, lines 19-35).
- **Hsieh (US 2003/0056123 A1)** discloses adjusting the frequency in the CPU based on the count of the idle thread and the comparison with the count and with a default value (see Abstract).
- **Therien et al. (US 2002/0133729 A1)** discloses automatically transitioning a processor to another performance level based on sampling of a processor utilization (see Abstract).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KENNETH TANG whose telephone number is (571)272-3772. The examiner can normally be reached on 8:30AM - 6:00PM, Every other Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng-Ai An can be reached on (571) 272-3756. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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/Meng-Ai An/
Supervisory Patent Examiner, Art Unit 2195

/Kenneth Tang/
Examiner, Art Unit 2195